



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/072,635      | 02/05/2002  | Densen Cao           | 5061.9 P            | 6321             |

7590 02/10/2005

Parsons, Behle & Latimer  
Suite 1800  
201 South Main Street  
P.O. Box 45898  
Salt Lake City, UT 84145-0898

EXAMINER

LEWIS, RALPH A

ART UNIT

PAPER NUMBER

3732

DATE MAILED: 02/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                    |  |
|------------------------------|--------------------------------------|------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/072,635 | <b>Applicant(s)</b><br>CAO, DENSEN |  |
|                              | <b>Examiner</b><br>Ralph A. Lewis    | <b>Art Unit</b><br>3732            |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 17 June 2004.
- 2a) ☒ This action is **FINAL**.      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **Finality of 9/27/2004 Office Action Withdrawn**

The finality of the last Office action is withdrawn in view of the new grounds of rejection of previously indicated allowable subject matter.

### **Rejections based on Prior Art**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mills (WO 99/16136) in view of Doiron et al (5,698,866).

Mills discloses a dental curing light (page 1, second paragraph) comprised of a hand held wand (Figure 5) having a light module 47, an elongated heat sink 45, 50, 51, having a distal end surface serving as a mounting platform on which primary heat sink 48 is mounted and light emitting semiconductors 43 mounted to the primary heat sink 48. In Mills the LEDs are mounted directly on a flat heat sink 48. Doiron et al, however, teach that an improvement over mounting diodes on a flat surface (Figures 9 and 10) is mounting them in a well (Figures 11 and 12) formed on the heat sink so that more light from the LEDs is reflected forward in the desired direction. To have mounted the Mills LEDs in wells as taught by Doiron et al so that more light is reflected forward in the

desired direction would have been obvious to one of ordinary skill in the art. In regard to the particular size ratios claimed between the length of the wand and the length of the secondary heat sink, one of ordinary skill in the art would have found the claimed values to all fall within a range one would expect in constructing Mills device.

In regard to the "light emitted from said light emitting semiconductor device exits the curing light at an angular orientation with said wand longitudinal axis" limitation it is noted that the light guide 41 of Mills et al is bent so as to angle the light exiting the curing light. The light exiting a well of the obviously modified Mills et al device would be parallel to the longitudinal axis of the wand and not meet the angular orientation, however, that is not what is being claimed.

Claims 10-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mills (WO 99/16136).

Mills discloses a dental curing light (page 1, second paragraph) comprised of a hand held wand (Figure 5) having a light module 47, an elongated heat sink 45, 50, 51, having a distal end surface serving as a mounting platform on which primary heat sink 48 is mounted and light emitting semiconductors 43 mounted to the primary heat sink 48. In regard to the plurality of epitaxial layers limitation, the limitation appears to be common and conventional in the construction of light emitting semiconductor chips. The use of conventional light emitting chips in the Mills device would have been obvious to one of ordinary skill in the art. In regard to the particular size ratios claimed between the length of the wand and the length of the secondary heat sink, one of ordinary skill in

the art would have found the claimed values to all fall within a range one would expect in constructing Mills device.

In regard to the "at least some light emitted from said light emitting semiconductor device departs from the curing light at an angular orientation . . . with respect to said wand longitudinal axis" limitation it is noted that the light guide 41 of Mills et al is bent so as to angle the light exiting the curing light.

#### **Action Made Final**

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

**Allowable Subject Matter**

In regard to claim 1, an amendment specifying that the light exiting the well does so at the angular orientation with respect to the longitudinal axis of the wand is allowable over the art of record and would be considered in an after-final amendment. In regard to claim 10, an amendment deleting the newly added limitation and specifying 1) that the light emitting semiconductor device has a plurality of flat epitaxial layers at least one of which comprises a light emitting surface which emits light perpendicular to the light emitting surface when bombarded by electrons and 2) that the semiconductor device is mounted at the distal end of the of the elongated heat sink such that the perpendicular light emitted from the flat light emitting surface is at an angular orientation of about 30 to about 150 degrees with respect to the wand longitudinal axis would be allowable over the prior art and considered in an after-final amendment.

Any inquiry concerning this communication should be directed to **Ralph Lewis** at telephone number **(571) 272-4712**. Fax (703) 872-9306. The examiner works a compressed work schedule and is unavailable every other Friday. The examiner's supervisor, Kevin Shaver, can be reached at (571) 272-4720.

R.Lewis  
February 7, 2005

  
Ralph A. Lewis  
Primary Examiner  
Au3732